UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 W. JACKSON BLVD
CHICAGO, IL 60604

09 OCT 2012

MEMORANDUM

SUBJECT: ACTION MEMORANDUM - Request for Approval and Funding for a Time-Critical Removal Action at the South Dayton Dump and Landfill Site, Moraine, Montgomery County, Ohio (Site ID # B52B)

FROM: Steve Renninger, OSC
Emergency Response Branch 1

THRU: Jason H. El-Zein, Chief
Emergency Response Branch 1

TO: Richard C. Karl, Director
Superfund Division

I. PURPOSE

The purpose of this memorandum is to request and document your approval for the United States Environmental Protection Agency (U.S. EPA) to expend up to $1,797,591 to conduct a time-critical removal action at the South Dayton Dump and Landfill (SDDL) Site (the Site), located in Moraine, Montgomery County, Ohio.

The response actions proposed herein are necessary in order to mitigate the immediate threat to human health and the environment posed by elevated levels of chlorinated volatile organic compounds (VOCs), including trichloroethylene (TCE), which is a hazardous substance as defined by CERCLA Section 101(14), in groundwater, soil vapor, sub-slab gas and indoor air at the Site. Groundwater concentrations of TCE exceed federal Maximum Contaminant Levels (MCLs) and Site-specific screening levels for soil gas contaminants developed by the Agency for Toxic Substances and Disease Registry (ATSDR) and the Ohio Department of Health (ODH). Groundwater, soil gas, sub-slab vapor, and indoor air sample results indicate a direct connection (i.e.; a completed exposure pathway) between TCE contaminated groundwater and TCE indoor air samples in properties at levels that ATSDR and ODH consider harmful to human health. In addition to elevated levels of TCE in the sub-slab, elevated levels of methane have been detected in several on-Site buildings causing a potential explosion hazard.

The removal action proposed herein will address immediate threats to public health, welfare, and the environment posed by the Site through the following actions:

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- Conduct subsurface gas (including VOCs and methane) extent of contamination sampling utilizing groundwater, soil gas, sub-slab, and indoor air sampling techniques.

- If the ODH Sub-Slab or Indoor Air Screening Level for a contaminant of concern (TCE, trichloroethylene [PCE], methane, etc) is exceeded for an off-site residential or commercial structure, design and install a vapor abatement mitigation system in the structure(s) impacted by subsurface gas migration. The abatement system will include installation of a sub-slab depressurization system (SSDS) or crawl space depressurization system, sealing cracks in walls and floors of the basement, and sealing drains that could be a pathway. The vapor abatement mitigation system will be designed to control levels of methane and VOCs to below ODH sub-slab and indoor air screening levels.

- If the ODH Sub-Slab or Indoor Air Screening Level for a contaminant of concern (TCE, PCE, methane, etc) is exceeded for an on-site commercial structure, design and install a vapor abatement mitigation system in the structure(s) impacted by subsurface gas migration. The Abatement system will include installation of a SSDS, sealing cracks in walls and floors, and sealing drains that could be a pathway. The vapor abatement mitigation system will be designed to control levels of methane and VOCs to below ODH sub-slab and indoor air screening levels.

- If levels of methane at the property boundary are greater than the lower explosive limit (LEL) (5% methane), design and install a perimeter landfill gas extraction system designed to prevent landfill gas migration off-site. The perimeter landfill gas system will be designed to control levels of methane at the property boundary to less than the methane LEL (5% methane).

There are no nationally significant or precedent-setting issues associated with the SDDL Site. The SDDL Site is being addressing through the Superfund Alternative Sites program, and the proposed removal action is consistent with the long term remedial plan for containment at the Site. This response action will be conducted in accordance with Section 104(a)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9604(a)(1), and 40 C.F.R. § 300.415 (*Removal action*) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) to abate or eliminate the immediate threats posed to public health and/or the environment.

The uncontrolled conditions of the hazardous substances present at the Site require that this action be classified as a time-critical removal action. The project will require approximately 100 working days to complete.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID: OHD980611388
Category: Time-Critical Removal Action

The SDDL Site is a former industrial landfill located at 1975 Dryden Road in Moraine, Ohio (Figure 1). It encompasses a total of 80 acres, 65 of which contain landfilled waste.

Approximately 40 acres of the landfill has been built over and/or is being used for other commercial/industrial purposes.

The landfill operated from the early 1940s to 1996 and is a filled sand and gravel pit. The landfill contains household waste, drums, metal turnings, fly ash, foundry sand, demolition material, wooden pallets, asphalt, paint, paint thinner, oils, brake fluids, asbestos, solvents, transformers and other industrial waste. As the excavated areas of the Site were filled, some of the property was sold and/or leased to businesses including Valley Asphalt and other businesses along Dryden Road and East River Road. The Miami Conservancy District owns the southern part of the site including part of the large quarry pond.

A. Site Conditions and Background

1. Removal Site Evaluation

a) Site Background – 1946 thru 1996 Landfill Operations

Disposal of waste materials began at the Site in the early 1940s. Materials dumped at the Site included drummed wastes. Known hazardous substances were disposed at the Site, including drums containing hazardous waste from nearby facilities. Some of the drums contained cleaning solvents (1,1,1-trichloroethane ["TCA"]; methyl ethyl ketone ["MEK"]; and xylene); cutting oils; paint; stoddard solvents; and machine-tool, water-based coolants. The Site had previously accepted materials including oils, paint residue, brake fluids, chemicals for cleaning metals, solvents, etc. Large quantities of foundry sand and fly ash were dumped at the Site. Asbestos was also dumped at the Site.

A timeline of the Site history is presented below.

- During the 1930s, excavation activities began according to the aerial photographs.
- In 1936, Cyril Grillot and Horace Boesch acquired interests in portions of the approximately 40-acre central portion of the Site.
- In 1940, Alcine Grillot (Cyril Grillot's brother) began a landfill operation at the Site.
- After 1955, the Site ceased accepting municipal wastes.
- In the mid 1950s, buildings were constructed on the portions of the Site adjoining Dryden Road and businesses reportedly began operation.
- In approximately 1956, Valley Asphalt began operations on the northern part of the site.
- In 1969, the Montgomery County Health Department (MCHD) first licensed the Site as a solid waste disposal facility permitted to accept commercial and industrial wastes.
- A 1969 MCHD inspection report found the Site in violation for smoke control, indicating that combustible waste was being burned at this time. Inspection reports for 1969 and 1970 state that open burning is not permitted at the Site.

- In 1970, Alcine Grillot formed Moraine Recycling, Inc. and developed, permitted, and constructed an air curtain destructor along the west side of the Site to burn combustible materials.

- In 1974, the Ohio EPA took over the authority for annual licensing; however, the licenses continued to be issued by and overseen by MCHD on behalf of Ohio EPA. The last license granted by Ohio EPA was issued in 1986.

- 1976, GM Delco Moraine instructed its employees to stop sending asbestos waste to the Site.

- As of 1987, the Site's Permit limited materials for disposal to construction and demolition debris.

- In 1990, the Site stopped accepting and disposing of fly ash at the Site.

- In early 1996, the Site closed.

b) Site Background – Remedial Investigation/Feasibility Study

U.S. EPA conducted a screening site inspection of the Site in 1991 and a focused site inspection prioritization site evaluation in 1995. Ohio EPA conducted a site team evaluation prioritization of the landfill in 1996. In 2002, U.S. EPA conducted an aerial photographic analysis of the site.

In 2000, Valley Asphalt removed several drums and 2,217 tons of contaminated soils from their property (northern area of the Site) that was uncovered when a sewer line was being excavated. U.S. EPA proposed the site to the National Priorities List in 2004.

In 2006, several potentially responsible parties (PRPs) for the Site agreed to conduct further studies and evaluate cleanup options at the Site under a Remedial Investigation/Feasability Study (RI/FS). The RI/FS is being conducted under an Administrative Settlement Agreement and Order on Consent with U.S. EPA. However, the PRPs' initial RI/FS work plans were deficient and U.S. EPA did not approve them. In 2008, the PRPs agreed to conduct a streamlined RI/FS at the site. U.S. EPA approved these work plans, and the PRPs conducted several investigations at the site from 2008 through 2010.

The 2008-2010 investigations included geophysical surveys, test pit and test trench sampling, vertical aquifer sampling, landfill gas sampling and groundwater monitoring well installation and sampling. The groundwater contamination (above MCLs) along the eastern boundary of the Site (Dryden Road) included TCE, vinyl chloride, cis-1,2-dichloroethene (cis-1,2-DCE), benzene, arsenic and lead. In 2010, groundwater monitoring well MW-229 showed a TCE concentration of 70 parts per billion (ppb), which is greater than the TCE MCL of 5 ppb. In 2008 and 2009, groundwater monitoring well MW-210 showed a TCE concentration of 260 and 180 ppb, respectively, which are both greater than the TCE MCL of 5 ppb. MW-210 is located on the southeastern corner of the Site. From 1996 to 2005, MW-202 showed TCE concentrations from 8.1 to 41 ppb, which are greater than the TCE MCL of 5 ppb. MW-202 is located along Dryden Road on the eastern perimeter of the Site. See Table 1.

TABLE 1

GROUNDWATER SAMPLES EXCEEDING THE MAXIMUM CONTAMINANT LEVEL FOR TRICHLOROETHYLENE

Groundwater Monitoring Well	Date(s) of Sampling	TCE MCL (ppb)	TCE Concentration (ppb)
MW-202	1996-2005	5	**8.1 to 41**
MW-210	2008	5	**260**
MW-210	2009	5	**180**
MW-229	2010	5	**70**

Notes:
Results bolded and highlighted exceed the Maximum Contaminant Level (MCL) for Trichloroethylene (TCE)
ppb = parts per billion

Preliminary groundwater elevation monitoring and mapping conducted by the PRPs in 2008-2009 indicated groundwater flow direction in the vicinity of the Site was variable. During the July 2008 to December 2008 monitoring events, groundwater flow appeared to be generally to the west, with occasional components of flow to the northwest and southwest. During the January 2009 monitoring event, groundwater flow appears to be primarily to the southwest. During the February 2009 monitoring event, groundwater flow appears to be primarily to the southeast.

In 2009 and 2010, the PRPs conducted soil vapor sampling at 9 gas probes on Site. Soil gas/vapor sampling showed TCE levels greater than the ODH sub-slab TCE screening level of 20 parts per billion by volume (ppbv), with a high TCE concentration of 10,420 ppbv in GP20-09.

Table 2 summarizes the 2009 and 2010 PRP soil vapor/gas sampling results for TCE only:

TABLE 2

SUMMARY OF 2009-2010 PRP SOIL VAPOR SAMPLING – TCE ONLY

Compound	Sub-Slab Screening Level (10^{-5} Risk Level for Non-Residential Locations)	Gas Probe Identification Number				
		GP12-09	GP20-09	GP19-09	GP15-09	GP14-09
Trichloroethylene	20	**223**	**10,420**	**67**	**147**	**117**

Notes:
Results reported in parts per billion by volume, except for percent methane.
Results bolded and highlighted yellow indicate results exceeding the sub-slab screening level at the 10^{-5} Risk Level.
Results bolded and highlighted red indicate results exceeding the sub-slab screening level at both the 10^{-4} and 10^{-5} Risk Levels. 10^{-4} Risk Levels are used for determining removal actions.

Based on the investigations, the PRPs agreed to divide the site work into two parts. Operable unit one (OU1) would involve evaluating cleanup alternatives to address 55 acres of the landfill, and would include cleanup alternatives that would allow on-site business to remain safely operating at the site.

The PRPs submitted draft RI/FS reports for the site in May 2010 and January 2011. U.S. EPA found the reports inadequate and disapproved them. The PRPs submitted a revised report for OU1 in June 2011, but the U.S. EPA Remedial Project Manager (RPM) again found it inadequate. In June 2012, U.S. EPA, in consultation with Ohio EPA, determined that additional data must be collected on groundwater and potential hot spots before selecting a remedy for OU1. U.S. EPA anticipated oversight of additional OU1 RI/FS field work, with a proposed cleanup plan and final OU1 remedy selection by March 2015. After U.S. EPA selects a final cleanup plan, U.S. EPA will begin negotiating with the PRPs on the legal agreements for designing, constructing and monitoring this part of the remedy.

Operable unit two (OU2) will involve more detailed investigations of the landfill materials in remaining site areas, surface water and sediment in the on-site Quarry Pond and the Great Miami River, floodplain soils, and off-site groundwater. U.S. EPA expects to start working with the PRPs on the data quality objectives process for this work, and to have a work plan for the OU2 work in 2013.

The PRPs are also conducting a vapor intrusion study, to evaluate whether landfill chemicals are posing immediate threats to the on and near-site businesses. Sampling conducted in January and March 2012 indicated that TCE and/or methane levels greater than the ATSDR and ODH TCE sub-slab and indoor air screening levels were observed in five on-Site non-residential buildings.

In January and March 2012, the PRPs conducted sub-slab and indoor air sampling at a number of properties located on-Site and along Dryden and East River Roads. A summary of the analytical results is as follows:

- One non-residential building (2003 Dryden Road – Building 2) showed a sub-slab 1,1-Dichloroethane (1,1-DCA) level greater than the ODH sub-slab 1,1-DCA screening level of 160 ppbv, with a high 1,1-DCA concentration of 963 ppbv.

- Two non-residential buildings (1903 Dryden Road – Building 2 and 2031 Dryden Road – Building 1) showed sub-slab benzene levels greater than the ODH sub-slab benzene screening level of 20 ppbv, with a high benzene concentration of 313 ppbv in 2031 Dryden Road.

- Two non-residential buildings (2015 Dryden Road, Building 1 and 2031 Dryden Road, Building 1) showed sub-slab cis-1,2-DCE levels greater than the ODH sub-slab cis-1,2-DCE screening level of 370 ppbv, with a high cis-1,2-DCE concentration of 10,341 ppbv at 2031 Dryden Road, Building 1.

- Three non-residential buildings (1903 Dryden Road, Building 2; 2003 Dryden Road, Building 2; and 2031 Dryden Road, Building 1) showed sub-slab vinyl chloride levels

greater than the ODH sub-slab vinyl chloride screening level of 20 ppbv, with a high vinyl chloride concentration of 1,721 ppbv.

- Thirteen non-residential buildings showed sub-slab TCE levels greater than the ODH sub-slab TCE screening level of 20 ppbv, with a high TCE concentration of 5,582 ppbv. Three of the thirteen non-residential buildings (1951 Dryden Road, 2015 Dryden Road and 2031 Dryden Road) also showed indoor air TCE levels greater than the ODH indoor air TCE screening level of 2 ppbv, with a high TCE concentration of 13 ppbv, documenting a Completed Exposure Pathway for Vapor Intrusion.

- 2031 Dryden Road, Building 1 showed a sub-slab methane level of 0.97% and 1903 Dryden Road, Building 2 showed a sub-slab methane level of 6.6%, which exceeds the ODH sub-slab methane screening level of 0.5%. Methane is explosive between 5% and 15%.

Table 3 summarizes the four non-residential on-Site buildings where TCE and methane sub-slab and indoor air screening levels were exceeded.

TABLE 3

SUMMARY OF PRP VAPOR INTRUSION SAMPLING GREATER THAN TCE AND METHANE SCREENING LEVELS

JANUARY AND MARCH 2012

Address	Methane Sub-Slab Screening Level	TCE Screening Levels (10^{-5} levels)		Dates Sampled by CRA - January and March 2012		
		Sub-Slab (in ppbv)	Indoor Air (in ppbv)	Max Methane in Sub-Slab	Max TCE Sub-Slab (in ppbv)	Max TCE Indoor Air (in ppbv)
1903 Dryden Road	0.5%	20	2	**6.6%**	**32**	ND
1951 Dryden Road	0.5%	20	2	ND	**2,977**	**13**
2015 and 2019 Dryden Road	0.5%	20	2	NA	**5,396**	**5.6**
	0.5%	20	2	ND	**5,582**	**3**
2031 Dryden Road	0.5%	20	2	**0.97%**	**688**	**5.2**

Notes:

Results bolded and highlighted yellow indicate results exceeding the sub-slab screening level at the 10^{-5} Risk Level (Hazard Index of 1.0)

Results bolded and highlighted red indicate results exceeding the sub-slab screening level at both the 10^{-4} and 10^{-5} Risk Levels.

Max = Maximum

NA = Not analyzed

ND = Not detected

ppbv = parts per billion by volume

In order to obtain seasonal Vapor Intrusion data in July and August 2012, the PRPs conducted additional sub-slab and indoor air sampling at a number of commercial and residential properties located on-Site and along Dryden and East River Roads. A summary of the analytical results is as follows:

- One non-residential building (2003 Dryden Road – Building 2) showed a sub-slab 1,1-DCA level greater than the ODH sub-slab 1,1-DCA screening level of 160 ppbv, with a 1,1-DCA concentration of 4,100 ppbv.

- One non-residential building (2003 Dryden Road, Building 2) showed a sub-slab vinyl chloride level greater than the ODH sub-slab vinyl chloride screening level of 20 ppbv, with a vinyl chloride concentration of 5,500 ppbv.

- Seven on-Site non-residential buildings showed sub-slab TCE levels greater than the ODH sub-slab TCE screening level of 20 ppbv, with a high TCE concentration of 2,700 ppbv. Two of the seven non-residential buildings (1901 Dryden Road and 2045 Dryden Road) also showed indoor air TCE levels greater than the ODH indoor air TCE screening level of 2 ppbv, with a high TCE concentration of 50 ppbv, documenting a completed exposure pathway for Vapor Intrusion. This indoor air TCE result is 2.5 times greater than the removal action screening level provided by ODH. In addition, one structure on the Valley Asphalt property (Murphy's Plumbing structure) showed an indoor air sample having a PCE concentration of 38 ppbv, which exceeds the ODH indoor air PCE screening level of 25 ppbv.

- One on-Site non-residential building (2003 Dryden Road, Building 2) showed sub-slab and indoor air benzene levels greater than the ODH sub-slab and indoor air benzene levels. The sub-slab sample (Probe A) showed a benzene concentration of 50 ppbv, which exceeds the ODH sub-slab benzene screening level of 20 ppbv. The indoor air sample showed a benzene concentration of 2.4 ppbv, which exceeds the ODH indoor air benzene screening level of 2 ppbv. The sub-slab and indoor air sampling results document a completed exposure pathway for Vapor Intrusion.

Table 4 summarizes the three non-residential on-Site buildings where TCE sub-slab and indoor air screening levels were exceeded.

TABLE 4

SUMMARY OF PRP VAPOR INTRUSION SAMPLING GREATER THAN TCE SCREENING LEVELS JULY AND AUGUST 2012

Address	TCE Screening Levels (10^{-5} levels)		Dates Sampled by CRA – July and August 2012	
	Sub-Slab (in ppbv)	Indoor Air (in ppbv)	Max TCE in Sub-Slab (in ppbv)	Max TCE Indoor Air (in ppbv)
1901 Dryden Road – Building 1	20	2	**2,700**	**8.2**
2045 Dryden Road – Building 1	20	2	**1,500**	**50**

Notes:

Results bolded and highlighted yellow indicate results exceeding the sub-slab screening level at the 10^{-5} Risk Level (or Hazard Index of 1.0)

Results bolded and highlighted red indicate results exceeding the sub-slab screening level at both the 10^{-4} and 10^{-5} Risk Levels. 10^{-4} Risk Levels (or Hazard Index of 10) are 10-times greater than the 10^{-5} Risk Levels.

Max = Maximum

ppbv = parts per billion by volume

Table 5 summarizes the one non-residential on-Site building where the PCE indoor air screening level was exceeded.

TABLE 5

SUMMARY OF PRP VAPOR INTRUSION SAMPLING GREATER THAN PCE SCREENING LEVELS

JULY AND AUGUST 2012

Address	PCE Screening Levels (10^{-5} levels)	Dates Sampled by CRA – July and August 2012
	Indoor Air (in ppbv)	Max PCE Indoor Air (in ppbv)
1901 Dryden Road – Murphy's Plumbing structure	25	**38**

Notes:

Results bolded and highlighted yellow indicate results exceeding the sub-slab screening level at the 10^{-5} Risk Level (or Hazard Index of 1.0)

Max = Maximum

ppbv = parts per billion by volume

Table 6 summarizes the one non-residential on-Site building where the benzene sub-slab and indoor air screening levels were exceeded.

TABLE 6

SUMMARY OF PRP VAPOR INTRUSION SAMPLING GREATER THAN THE BENZENE SCREENING LEVELS JULY AND AUGUST 2012

Address	Benzene Screening Levels (10^{-5} levels)		Dates Sampled by CRA – July and August 2012	
	Sub-Slab (in ppbv)	Indoor Air (in ppbv)	Max TCE in Sub-Slab (in ppbv)	Max TCE Indoor Air (in ppbv)
2003 Dryden Road – Building 2	20	2	**50**	**2.4**

Notes:

Results bolded and highlighted yellow indicate results exceeding the sub-slab screening level at the 10^{-5} Risk Level (or Hazard Index of 1.0)
Max = Maximum
ppbv = parts per billion by volume

c) Site Background – Remedial Program Request for Removal Assistance

In a letter dated June 5, 2012, U.S. EPA RPM Karen Cibulskis requested U.S. EPA Emergency Response Branch assistance to determine if the Site met the criteria for a time-critical removal action. The letter requested removal assistance in evaluating U.S. EPA's options for addressing current and potential vapor intrusion risks at the Site, including whether Removal authority could be appropriately used to implement mitigation measures to address all or some of the current and threatened risks posed by VOCs (primarily TCE) in sub-slab soil gas at 12 commercial/industrial buildings built over the landfill, and at an adjacent commercial/industrial building (U.S. EPA, June 2012). PRP Vapor intrusion sampling in January and March 2012 has shown TCE sub-slab vapor levels as high as 5,582 ppbv and TCE indoor air vapor levels as high as 13 ppbv, a documented completed exposure pathway.

At the occupied building located at 2031 Dryden Road, methane was detected in a laboratory sub-slab sample at 0.97%, which exceeds the ODH sub-slab methane screening level of 0.5%. Methane was not detected in the indoor air (based on field data).

In Building 2 located at 1903 Dryden Road, which is used for storage, methane was detected in a laboratory sub-slab sample above 100% of the LEL (sample concentration 6.6% methane by

volume), but was not detected in indoor air (based on field data). Building 2 is currently closed to access.

d) Site Background – Ohio Department of Health

On July 6, 2012, the ODH provided health-based guidance to evaluate the results of Vapor Intrusion sub-slab and indoor air sampling for contaminants of concern at the Site. ATSDR and ODH identified residential and non-residential sub-slab and indoor air screening levels. The screening levels are based on 10^{-5} cancer risk or a Hazard Index of 1.0 (Ohio Department of Health, July 2012) and generally used at remedial sites. ODH also provided 10^{-4} screening levels for time-removal action evaluation. Table 7 summarizes the TCE, PCE and methane screening levels for the Site.

TABLE 7

2012 OHIO DEPARTMENT OF HEALTH - TCE, PCE, BENZENE AND METHANE SCREENING LEVELS

Chemical of Concern	Residential Screening Level (10^{-5})	Non-Residential Screening Level (10^{-5})	Residential Screening Level (10^{-4})	Non-Residential Screening Level (10^{-4})
Indoor Air				
TCE	0.4	2	4	20
PCE	6	25	60	250
Benzene	0.4	2	4	20
Methane	0.05		0.05	
Sub-Slab				
TCE	4	20	40	200
PCE	60	250	600	2,500
Benzene	4	20	40	200
Methane	0.5		0.5	

Notes:

The screening levels are in parts per billion by volume (ppbv) and based on 10^{-5} cancer risk (Hazard Index of 1.0) and based on a 10^{-4} cancer risk (Hazard Index of 10).

e) Site Background – Ohio EPA Request for Removal Assistance

In a letter dated July 17, 2012, the Ohio EPA expressed concerns about the risk to human health from indoor air exposure to VOCs and the risk of explosive conditions from landfill gas. Ohio EPA views the Site as a threat to the on-Site and surrounding businesses and residences, and supports the Remedial branch's request for assistance from the Removal branch in evaluating

options for addressing current and potential vapor intrusion risks at the SDDL Site (Ohio EPA July 2012).

f) Site Background – 2012 U.S. EPA Removal Site Investigation

Between July 12 and August 8, 2012, U.S. EPA conducted a Removal Site Investigation at the Site including residential and non-residential sub-slab sampling and the installation of soil gas vapor probes along the Site's eastern perimeter.

Sub-Slab Samples

U.S. EPA collected sub-slab samples at three residential and five non-residential buildings. The results of the sampling are as follows:

- U.S. EPA observed PCE in sub-slab samples collected from the three residential properties (2391, 2232 and 2373 East River Road) at concentrations ranging from 7.7 to 20 ppbv, which are less than the ODH residential sub-slab PCE screening level of 60 ppbv.

- Sub-slab samples collected from non-residential properties located at 2230 and 2205 Dryden Road did not detect TCE at concentrations greater than the ODH sub-slab TCE screening level of 20 ppbv. PCE was detected in one sub-slab sample collected from 2205 Dryden Road at a concentration of 110 ppbv, which is less than the non-residential sub-slab PCE screening level of 250 ppbv.

- 1951 Dryden Road (Building 1, Probe D) – U.S. EPA observed a TCE sub-slab concentration of 2,900 ppbv, which exceeds the ODH sub-slab TCE screening level of 20 ppbv.

- 2031 Dryden Road (Building 1, Probe C) – U.S. EPA observed a cis-1,2-DCE sub-slab concentration of 27,000 ppbv, which exceeds the ODH sub-slab cis-1,2-DCE screening level of 370 ppbv; a benzene sub-slab concentration of 540 ppbv, which exceeds the benzene screening level of 20 ppbv; a TCE sub-slab concentration of 460 ppbv, which exceeds the TCE screening level of 20 ppbv; a m,p-xylene sub-slab concentration of 2,100 ppbv, which exceeds the m,p-xylene screening level of 2,000 ppbv; an o-xylene sub-slab concentration of 2,000 ppbv, which equals the o-xylene screening level of 2,000 ppbv; and a vinyl chloride concentration of 2,600 ppbv, which exceeds the vinyl chloride screening level of 20 ppbv. In addition, methane was detected in the sub-slab sample at a concentration of 2.2%, which exceeds the ODH sub-slab methane screening level of 0.5%.

- 2015 Dryden Road (S&J Building, Probe B) – U.S. EPA observed a cis-1,2-DCE sub-slab concentration of 1,400 ppbv, which exceeds the ODH sub-slab cis-1,2-DCE screening level of 370 ppbv. TCE was observed in the sub-slab air sample at a concentration of 17,000 ppbv, which exceeds the TCE sub-slab screening level of 20 ppbv.

Table 8 summarizes the sub-slab data having sub-slab exceedances and Tables B-1 and B-2 (attached) summarizes all of the sub-slab analytical results.

TABLE 8

SUMMARY OF 2012 U.S. EPA SUB-SLAB EXCEEDANCES

Compound	Sub-Slab Screening Level (10^{-5} Risk Level for Non-Residential Locations)	Sample ID	1951 Dryden-SS-080712	2031 Dryden-SS-080712	2015 Dryden-SS-080812
		Address	1951 Dryden Road Probe D (Building 1)	2031 Dryden Road Probe C	2015 Dryden Road Probe B (S&J Building)
		Date Sampled	8/7/2012	8/7/2012	8/8/2012
cis-1,2-Dichloroethylene	370		**52**	**27,000**	**1,400**
Benzene	20		ND (11)	**540**	ND (28)
Trichloroethylene	20		**2,900**	**460**	**17,000**
m,p-Xylene	2,000		ND (11)	**2,100**	ND (28)
o-Xylene	2,000		ND (11)	**2,000**	ND (28)
Vinyl Chloride	20		ND (11)	**2,600**	ND (28)
Percent Methane	0.5%		0.00037%	**2.2**	0.00045%

Notes:
Results reported in parts per billion by volume, except for percent methane.
Results bolded and highlighted yellow indicate results exceeding the sub-slab screening level at the 10^{-5} Risk Level (Hazard Index of 1.0)
Results bolded and highlighted red indicate results exceeding the sub-slab screening level at both the 10^{-4} and 10^{-5} Risk Levels. 10^{-4} Risk Levels (Hazard Index of 10) are 10-times greater than 10^{-5} Risk Levels.
ND = Not detected at method reporting limit

Soil Gas Samples

U.S. EPA used a Geoprobe unit and installed soil gas probes at nested depths between 8-feet and 16-feet below ground surface (bgs) at four locations (GP-3, GP-4, GP-6 and GP-7) on the west side of Dryden Road, two locations (GP-2 and GP-5 on City of Moraine property) on the east side of Dryden Road and one location (GP-1) adjacent to the property located at 2233 East River Road.

From July 24 through 27, 2012, U.S. EPA conducted field screening at each soil gas probe for VOCs (using a Multi-RAE photoionization detector [PID]) and percent methane (GEM2000 methane meter). U.S. EPA observed detectable methane concentrations in soil gas probe GP-2. The 12-foot bgs nested soil gas probe showed methane levels ranging from 14.7% to 17.6%. The GP-2 soil gas probe at the 16-foot depth showed methane levels ranging from 22.2% to 24.1%.

On July 30, 2012, grab samples were collected and analyzed for methane and VOCs (using Method TO-15) from five of the soil gas probe depths. Figure 2 shows the locations of soil gas probes GP-1 through GP-7. The following is a summary of the soil gas probe sampling results:

- The soil gas sample collected at GP-2 (16-feet bgs) showed the following VOC concentrations: 2,2,4-trimethylpentane at 14,000 ppbv, hexane at 12,000 ppbv and heptane at 860 ppbv. In addition, methane was detected at 2.5%.

- The soil gas sample collected at GP-3 (8-feet bgs) showed a TCE concentration of 120 ppbv, which exceeds the ODH sub-slab TCE screening level of 20 ppbv.

- The soil gas sample collected at GP-4 (16-feet bgs) showed a TCE concentration of 49 ppbv, which exceeds the ODH sub-slab TCE screening level of 20 ppbv.The soil gas sample collected at GP-6 (12-feet bgs) showed a TCE concentration of 41 ppbv, which exceeds the ODH sub-slab TCE screening level of 20 ppbv.

Table 9 summarizes the soil gas sampling exceedances and Table B-3 summarizes all of the soil gas analytical results.

TABLE 9

SUMMARY OF JULY 2012 U.S. EPA SOIL GAS EXCEEDANCES

Compound	Sub-Slab Screening Level (10^{-5} Risk Level for Non-Residential Locations)	Sample ID	SDL-GP2-16-073012	SDL-GP3-8-073012	SDL-GP4-16-073012	SDL-GP6-12-073012
		Gas Probe	GP-2	GP-3	GP-4	GP-6
		Sampling Depth	16-feet	8-feet	16-feet	12-feet
Hexane	None Provided		**12,000**	ND (0.78)	ND (0.76)	ND (0.74)
Heptane	None Provided		**860**	ND (0.78)	ND (0.76)	ND (0.74)
2,2,4-Trimethylpentane	None Provided		**14,000**	ND (0.78)	ND (0.76)	ND (0.74)
Trichloroethylene	20		ND (370)	**120**	**49**	**41**
Percent Methane	0.5%		**2.5%**	ND (0.00018%)	ND (0.00018%)	ND (0.00018%)

Notes:
Results reported in parts per billion by volume, except for percent methane.
Results bolded and highlighted yellow indicate results exceeding the sub-slab screening level at the 10^{-5} Risk Level (Hazard Index of 1.0)
ID = Identification
ND = Not detected at method reporting limit

2. Physical Location

The Site is located at 1901 through 2153 Dryden Road and 2225 East River Road in Moraine, Ohio. The Site's geographic coordinates (based on the address of 1975 Dryden Road) are 39° 43' 42.6354" North latitude and 84° 12' 59.8278" West longitude (Figure 1). The Site is bounded to the north and west by the Miami Conservancy District floodway (part of which is included in the definition of the Site), the Great Miami River Recreational Trail and the Great Miami River beyond. The Site is bounded to the east by Dryden Road with light industrial facilities beyond, to the southeast by residential and commercial properties along East River Road with a residential trailer park beyond, and to the south by undeveloped land with industrial facilities beyond (U.S. EPA, November 2011).

Approximately 25,060 people live within a 4-mile radius of the Site. Six single-family residences are located on the northwest side of East River Road and are adjacent to the southeast boundary of the Site. A seventh single family home is located on the southeast side of East River Road and is within 300 feet of the Site. A trailer park with several residences is also situated approximately 300 feet southeast of the Site at the southeast intersection of Dryden Road and East River Road.

Part of the landfill is within the 100 year floodway and more than half of the landfill is within the 100 year floodplain. The landfill is within a secondary wellhead protection area and there is a well (not used for drinking water) in the northern part of the landfill. The Site also contains a federally designated wetland. Some of the landfilled materials are below the water table and are in direct contact with groundwater.

The area surrounding the SDDL Site was screened for Environmental Justice (EJ) concerns using Region 5's EJ Assist Tool (which applies the interim version of the national EJ Strategic Enforcement Assessment Tool (EJSEAT)). Census tracts with a score of 1, 2, or 3 are considered to be high-priority potential EJ areas of concern according to EPA Region 5. The SDDL Site is in a census tract with a score of **4** (Attachment III). Therefore, Region 5 does not consider this Site to be a high-priority potential EJ area of concern. Please refer to the attached analysis for additional information.

3. Site Characteristics

From January through August 2012, the PRPs collected sub-slab and indoor air vapor intrusion sampling at the Site. Between July 11 and August 8, 2012, U.S. EPA conducted a Removal Site Investigation at the Site, including sub-slab and soil gas vapor intrusion sampling along the Site's eastern perimeter.

Summary of U.S. EPA and PRP sampling results in 2012:

- One non-residential building (2003 Dryden Road – Building 2) showed a sub-slab 1,1-DCA level greater than the ODH sub-slab 1,1-DCA screening level of 160 ppbv, with a high 1,1-DCA concentration of 4,100 ppbv.

- Three non-residential buildings (1903 Dryden Road – Building 2, 2003 Dryden Road – Building 2 and 2031 Dryden Road – Building 1) showed sub-slab benzene levels greater than the ODH sub-slab benzene screening level of 20 ppbv, with a high benzene concentration of 540 ppbv in 2031 Dryden Road. An indoor air sample collected at 2003 Dryden Road – Building 2 showed a benzene concentration of 2.4 ppbv, which exceeds the ODH indoor air benzene screening level of 2 ppbv. This documents a completed exposure pathway for Vapor Intrusion.

- Two non-residential buildings (2015 Dryden Road, Building 1 and 2031 Dryden Road, Building 1) showed sub-slab cis-1,2-DCE levels greater than the ODH sub-slab cis-1,2-DCE screening level of 370 ppbv, with a high cis-1,2-DCE concentration of 27,000 ppbv at 2031 Dryden Road, Building 1.

- Three non-residential buildings (1903 Dryden Road, Building 2; 2003 Dryden Road, Building 2; and 2031 Dryden Road, Building 1) showed sub-slab vinyl chloride levels greater than the ODH sub-slab vinyl chloride screening level of 20 ppbv, with a high vinyl chloride concentration of 5,500 ppbv.

- Thirteen non-residential buildings showed sub-slab TCE levels greater than the ODH sub-slab TCE screening level of 20 ppbv, with a high TCE concentration of 17,000 ppbv. Five of the thirteen non-residential buildings also showed indoor air TCE levels greater than the ODH indoor air TCE screening level of 2 ppbv, with a high TCE concentration of 50 ppbv documenting a completed exposure pathway. In addition, one non-residential on-Site structure showed a crawl space PCE level greater than the ODH indoor air PCE screening level of 25 ppbv, with a PCE concentration of 38 ppbv.

- One non-residential building (2031 Dryden Road – Building 1) showed a sub-slab m,p-xylene sub-slab concentration of 2,100 ppbv, which exceeds the m,p-xylene screening level of 2,000 ppbv; and an o-xylene sub-slab concentration of 2,000 ppbv, which equals the o-xylene screening level of 2,000 ppbv.

- 2031 Dryden Road, Building 1 showed a sub-slab methane level of 2.2% and 1903 Dryden Road, Building 2 showed a sub-slab methane level of 6.6%, which exceeds the ODH methane sub-slab screening level of 0.5%. Methane is explosive between 5% and 15%.

- U.S. EPA observed detectable methane concentrations in one soil gas probe, GP-2, using a GEM-2000 methane meter. GP-2 contains nested soil gas sampling depths of 12-feet bgs and at 16-feet bgs. The GP-2 soil gas probe at the 12-foot depth showed methane levels ranging from 14.7% to 17.6%. The GP-2 soil gas probe at the 16-foot depth showed methane levels ranging from 22.2% to 24.1%. GP-2 is located off-Site (City of Moraine property) and on the eastern side of Dryden Road.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

A release of hazardous substances, pollutants, or contaminants is present due to documented vapor intrusion at the SDDL Site. A completed exposure pathway exists for vapor intrusion, as TCE has been documented in the groundwater (TCE as high as 260 ppb), in the soil gas (TCE as high as 10,420 ppbv), in the sub-slab (TCE as high as 17,000 ppbv) and in the indoor air (TCE as high as 50 ppbv). Vapor intrusion is occurring at the Site.

In addition, a second completed exposure pathway exists for vapor intrusion, as benzene has been documented in the sub-slab (at 50 ppbv) and in the indoor air (at 2.4 ppbv) at one on-Site non-residential property.

Sub-slab sampling has documented a methane level of 6.6% in one non-residential property on Site. Methane is explosive between 5% and 15%.

U.S. EPA field screening sampling at GP-2 (12-foot and 16-foot depths) has documented methane levels ranging from 14.7% to 24.1%. These results are greater than the ODH sub-slab methane screening level of 0.5% and greater than Ohio EPA's perimeter regulatory level of 5% (lower explosive limit). GP-2 is located off-Site, on the eastside of Dryden Road and adjacent to a Dayton Power & Light (DP&L) building.

5. NPL status

EPA proposed to list the SDDL Site on the CERCLA National Priorities List in 2004, but did not complete the listing process in favor of addressing the Site through the Superfund Alternative Sites program. The proposed removal action is consistent with the long term remedial plan for containment at the Site.

6. Maps, pictures and other graphic representations

Figure A-1 Site Location Map, Figure A-2 PRP Sampling Summary Map (Pre-July 2012), Figure A-3 U.S. EPA Soil Gas and Sub-Slab Sampling Location Map, Figure A-4 Photos, and Attachment 1 - Environmental Justice (EJ) analysis are included as attachments.

B. <u>Other Actions to Date</u>

1. Previous actions

Previous actions by U.S. EPA and the PRPs have been documented in the Background section (Section II.A.2).

2. Current actions

Vapor intrusion sampling results from 2012 by U.S. EPA and the PRPs have documented vapor intrusion is occurring at the Site. Five non-residential buildings have shown sub-slab TCE concentrations greater than the ODH sub-slab screening level (as high as 17,000 ppbv) and indoor air TCE concentrations greater than the ODH indoor air screening level of 2 ppbv (as high

as 50 ppbv). One non-residential building has shown a sub-slab benzene concentration (50 ppbv) greater than the ODH sub-slab screening level (20 ppbv) and an indoor air benzene concentration (2.4 ppbv) greater than the ODH screening level (2 ppbv). One non-residential building has shown a crawl space PCE concentration at 38 ppbv which exceeds the ODH indoor air PCE screening level of 25 ppbv. Vapor intrusion has been documented to be occurring at this Site. In addition, one non-residential building has shown a sub-slab methane level of 6.6%. Methane is explosive between 5% and 15%.

U.S. EPA has documented methane levels using field screening and soil gas samples in GP-2 (12-foot and 16-foot depths) ranging from 2.5% to 24.1%. These results are greater than the ODH sub-slab methane screening level of 0.5% and Ohio EPA's perimeter regulatory level of 5% (lower explosive limit). GP-2 is located off-Site, on the eastside of Dryden Road and adjacent to a DP&L building.

C. State and Local Authorities' Roles

In a letter dated July 17, 2012, the Ohio EPA expressed concerns about the risk to human health from indoor air exposure to VOCs and the risk of explosive conditions from landfill gas, Ohio EPA views the SDDL Site as a threat to the on-site and surrounding businesses and residences, and supports the Remedial branch's request for assistance from the Removal branch in evaluating options for addressing current and potential vapor intrusion risks at the South Dayton Dump and Landfill site (Ohio EPA, July 2012).

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the SDDL Site present a threat to the public health or welfare, and the environment, and meet the criteria for a time-critical removal action as provided for in the NCP, 40 C.F.R. § 300.415(b)(2). These criteria include, but are not limited to, the following:

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

Vapor intrusion occurs when vapors produced by a chemical spill or groundwater contamination plume migrate through soil into the foundations of structures and into the indoor air. When chemicals are spilled on the ground, they will seep into the soil and make their way into the groundwater. VOCs, including TCE, produce vapors that travel through soil. These vapors can enter a home or building through cracks in the foundation or into a basement with a dirt floor or concrete slab.

To date, U.S. EPA and the PRPs have conducted vapor intrusion sampling and have documented the following VOC and methane exceedances:

- One non-residential building (2003 Dryden Road – Building 2) showed a sub-slab 1,1-DCA level greater than the ODH sub-slab 1,1-DCA screening level of 160 ppbv, with a high 1,1-DCA concentration of 4,100 ppbv.

- Three non-residential buildings (1903 Dryden Road – Building 2, 2003 Dryden Road – Building 2 and 2031 Dryden Road – Building 1) showed sub-slab benzene levels greater than the ODH sub-slab benzene screening level of 20 ppbv, with a high benzene concentration of 540 ppbv in 2031 Dryden Road. An indoor air sample collected at 2003 Dryden Road – Building 2 showed a benzene concentration of 2.4 ppbv, which exceeds the ODH indoor air benzene screening level of 2 ppbv. This documents a completed exposure pathway for Vapor Intrusion.

- Two non-residential buildings (2015 Dryden Road, Building 1 and 2031 Dryden Road, Building 1) showed sub-slab cis-1,2-DCE levels greater than the ODH sub-slab cis-1,2-DCE screening level of 370 ppbv, with a high cis-1,2-DCE concentration of 27,000 ppbv at 2031 Dryden Road, Building 1.

- Three non-residential buildings (1903 Dryden Road, Building 2; 2003 Dryden Road, Building 2; and 2031 Dryden Road, Building 1) showed sub-slab vinyl chloride levels greater than the ODH sub-slab vinyl chloride screening level of 20 ppbv, with a high vinyl chloride concentration of 5,500 ppbv.

- Thirteen non-residential buildings showed sub-slab TCE levels greater than the ODH sub-slab TCE screening level of 20 ppbv, with a high TCE concentration of 17,000 ppbv. Five of the thirteen non-residential buildings show indoor air TCE levels greater than the ODH indoor air TCE screening level of 2 ppbv, with a high TCE concentration of 50 ppbv, documenting a completed exposure pathway. This indoor air TCE result is 2.5 times greater than the removal action screening level provided by ODH. In addition, one non-residential on-Site structure showed a crawl space PCE level greater than the ODH indoor air PCE screening level of 25 ppbv, with a PCE concentration of 38 ppbv.

- One non-residential building (2031 Dryden Road – Building 1) showed a sub-slab m,p-xylene sub-slab concentration of 2,100 ppbv, which exceeds the m,p-xylene screening level of 2,000 ppbv; and an o-xylene sub-slab concentration of 2,000 ppbv, which equals the o-xylene screening level of 2,000 ppbv.

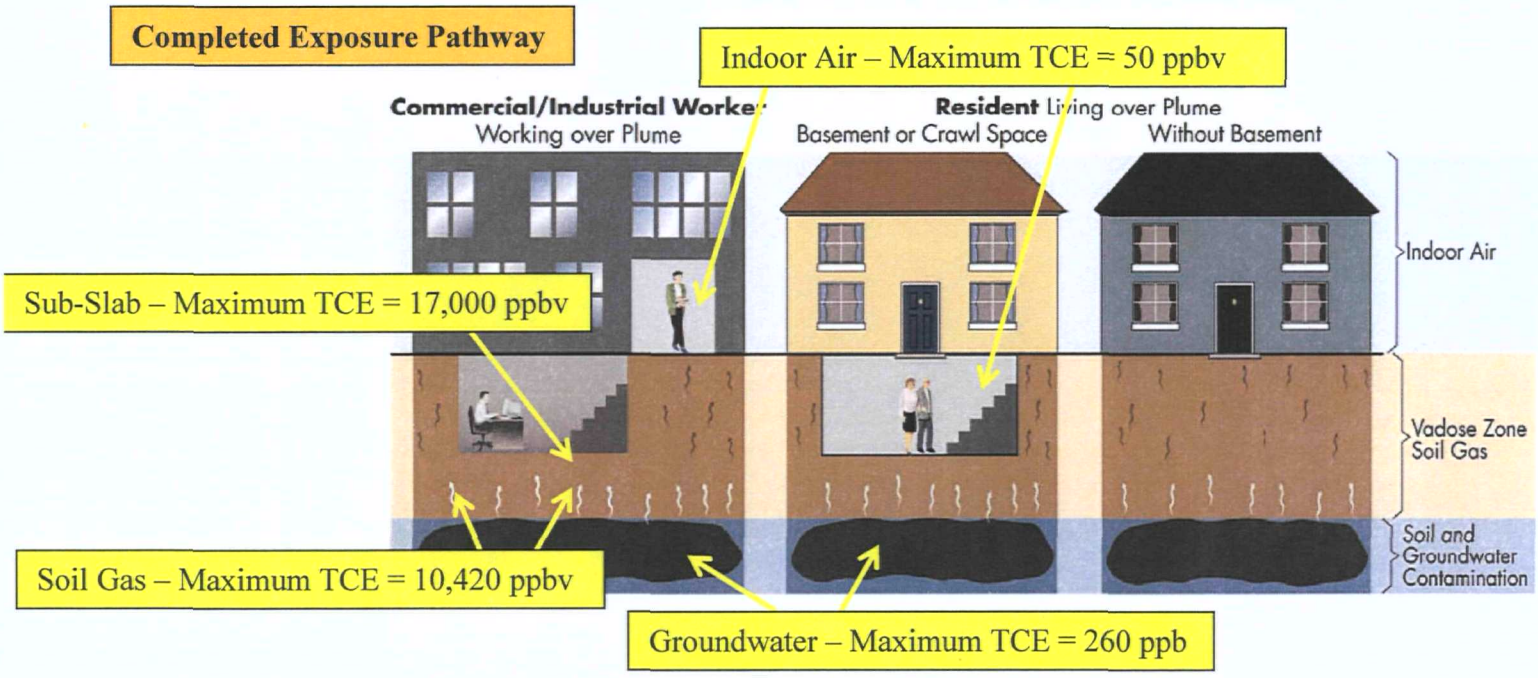
- 2031 Dryden Road, Building 1 showed a sub-slab methane level of 2.2% and 1903 Dryden Road, Building 2 showed a sub-slab methane level of 6.6%, which exceeds the ODH methane sub-slab screening level of 0.5%. Methane is explosive between 5% and 15%.

- U.S. EPA observed detectable methane concentrations in one soil gas probe, GP-2, using a GEM-2000 methane meter. GP-2 contains nested soil gas sampling depths of 12-feet bgs and at 16-feet bgs. The GP-2 soil gas probe at the 12-foot depth showed methane levels ranging from 14.7% to 17.6%. The GP-2 soil gas probe at the 16-foot depth showed methane levels ranging from 22.2% to 24.1%. The methane levels in GP-2 exceed Ohio EPA's perimeter regulatory level of 5% (lower explosive limit). GP-2 is located off-Site and on the eastern side of Dryden Road.

A completed exposure pathway exists for vapor intrusion, as TCE has been documented in the groundwater (TCE as high as 260 ppb), in the soil gas (TCE as high as 10,420 ppbv), in the sub-

slab (TCE as high as 17,000 ppbv) and in the indoor air (TCE as high as 50 ppbv). In addition, one non-residential building has shown a sub-slab benzene concentration (50 ppbv) greater than the ODH sub-slab screening level (20 ppbv) and an indoor air benzene concentration (2.4 ppbv) greater than the ODH screening level (2 ppbv). Vapor intrusion is occurring at this Site. In addition, U.S. EPA has documented one non-residential property with a sub-slab methane level of 6.6%, which by definition is in the explosive range of 5%-15%.

The SDDL Site Vapor Intrusion Conceptual Site Model (CSM) illustrating a completed exposure pathway for TCE below.



There is actual vapor intrusion exposure occurring and there is a potential for additional vapor intrusion to occur at this Site.

TCE is a hazardous substance within the meaning of Section 101 (14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) because it is listed at 40 CFR Section 302.4. Historical groundwater sampling, and PRP and U.S. EPA sub-slab and indoor air sampling results indicate that TCE vapors are migrating into non-residential buildings at chronic levels that ODH considers harmful to human health.

TCE is a man-made chemical that is widely used as a cleaner to remove grease from metal parts. TCE is a nonflammable, colorless liquid with a sweet odor. Exposure to TCE at very high concentrations (particularly in closed, poorly ventilated areas) may cause headaches, lung irritation, dizziness, poor coordination (clumsy), and difficulty speaking. According to the ODH, the evidence that TCE is a human carcinogen has been under review by health organizations since 2001. The U.S. Department of Health and Human Services considers TCE to be

"reasonably anticipated to be a human carcinogen" based on limited evidence of carcinogenicity from studies of humans and sufficient evidence of carcinogenicity from studies of laboratory animals. A report recently released by the National Academies of Science National Research Council (2006) has stated that "evidence on cancer and other health risks from TCE exposure has strengthened since 2001", pointing to studies of human populations that support "the conclusion that TCE is a potential cause of kidney cancer." Other ecological studies of communities exposed to TCE in drinking water supplies in Massachusetts, New Jersey, and North Carolina have suggested an association between these exposures and elevated levels of leukemia in the exposed population.

Threat of fire or explosion;

The PRPs conducted vapor intrusion sampling in January and March 2012. Sub-slab sampling showed methane percentages greater than the ODH sub-slab screening level of 0.5% at the following non-residential properties:

- 1901 Dryden Road, Building 2 – Probe A (January 2012): Methane = 2.9%
- 1901 Dryden Road, Building 2 – Probe A (March 2012): Methane = 6.6%
- 2031 Dryden Road, Building 1 – Probe C (March 2012): Methane = 0.97%

In July 2012, U.S. EPA documented methane at 2.5% at the 16-foot depth of soil gas probe GP-2 and in August 2012, U.S. EPA documented methane at 2.2% in a sub-slab sample collected from 2031 Dryden Road. These results exceed the ODH sub-slab screening level of 0.5%.

U.S. EPA has documented methane levels in GP-2 (12-foot and 16-foot depths) ranging from 14.7% to 24.1% at off-site locations (City of Moraine property). These results are greater than the ODH sub-slab methane screening level of 0.5% and exceed Ohio EPA's perimeter regulatory level of 5% (lower explosive limit). GP-2 is located off-Site, on the eastside of Dryden Road and adjacent to a DP&L building. Methane is flammable between 5% and 15%. Methane's LEL is 5% and the UEL is 15% methane per volume of air.

At the SDDL Site, methane was detected in four laboratory sub-slab soil gas samples above 10% of the LEL (greater than 0.5% methane) at non-residential buildings at the Site. At another building, methane was detected (at 6.6%) in a laboratory sub-slab soil gas sample above 100% of the LEL (greater than 5%). This building has the potential for an explosion/fire hazard if a spark or ignition source is present. This building is now closed to access.

Because methane is extremely flammable in the presence of oxygen and an ignition source (open flame, pilot light), the main public health threat posed from methane is the physical explosion hazard posed by methane levels between 5% and 15% by volume in the air (Ohio Department of Health, June 2012).

Ohio Revised Code (ORC) 3734.041 identifies explosive gases shall be considered to endanger human health or safety or the environment if concentrations of methane generated by the landfill in landfill structures, excluding gas control or recovery system components, exceed 25% of the LEL (or 1.25% methane in the indoor air) or if concentrations of methane generated by the landfill at the landfill boundary exceed the LEL (or 5% methane). U.S. EPA documented

methane levels in GP-2 ranging from 14.7% to 24.1%. GP-2 is located about 75-feet east of the eastern boundary of the Site. These methane levels violate ORC 3734.041.

The availability of other appropriate Federal or state response mechanisms to respond to the release;

Ohio EPA does not have the resources to respond to this Site. In a letter dated July 17, 2012, Ohio EPA expressed concerns about the risk to human health from indoor air exposure to VOCs and the risk of explosive conditions from landfill gas, Ohio EPA views the SDDL Site as a threat to the on-site and surrounding businesses and residences, and supports the Remedial branch's request for assistance from the Removal branch in evaluating options for addressing current and potential vapor intrusion risks at the South Dayton Dump and Landfill site (Ohio EPA, July 2012).

IV. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the known and suspected hazardous substances on Site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The response actions described in this memorandum directly address actual or potential releases of hazardous substances on Site, which may pose an imminent and substantial endangerment to public health, or welfare, or the environment. Removal activities on Site will include:

1. Develop and implement a Site Health and Safety Plan;

2. Conduct subsurface gas sampling (including VOCs and methane) and conduct extent of contamination sampling utilizing groundwater, soil gas, sub-slab, and indoor air sampling techniques;

3. If the ODH Sub-Slab or Indoor Air Screening Level for a contaminant of concern (TCE, PCE, methane, etc) is exceeded for an off-site residential structure, design and install a vapor abatement mitigation system in the structure(s) impacted by subsurface gas migration. The Abatement system will include installation of a SSDS or crawl space depressurization system, sealing cracks in walls and floors of the basement, and sealing drains that could be a pathway. The vapor abatement mitigation system will be designed to control levels of methane and VOCs to below ODH sub-slab and indoor air screening levels.

4. If the ODH Sub-Slab or Indoor Air Screening Level for a contaminant of concern (TCE, PCE, methane, etc) is exceeded for an on-site commercial structure, design and install a vapor abatement mitigation system in the structure(s) impacted by subsurface gas migration. The Abatement system will include installation of a SSDS, sealing cracks in walls and floors, and sealing drains that could be a pathway. The vapor abatement mitigation system will be designed to control levels of methane and VOCs to below ODH sub-slab and indoor air screening levels.

5. If levels of methane at the property boundary are greater than the lower explosive limit (5% methane), design and install a perimeter landfill gas extraction system designed to prevent landfill gas migration off-site. The perimeter landfill gas system will be designed to control levels of methane at the property boundary to less than the lower explosive limit (5% methane).

6. Develop and implement a performance sample plan to confirm that ODH screening levels are achieved for contaminants of concern following installation of on-site or off-site vapor abatement mitigation systems;

7. If necessary, develop and implement (1) a perimeter landfill gas extraction system performance sample plan including the installation of perimeter subsurface probes to confirm that methane action levels are achieved and (2) a landfill gas extraction system effluent sample plan.

The removal action will be conducted in a manner not inconsistent with the National Contingency Plan (NCP). The OSC has initiated planning for provision of post-removal Site control consistent with the provisions of Section 300.415(l) of the NCP. Operation and maintenance (O&M) of the vapor abatement systems will be the responsibility of the property owner following installation and performance monitoring by U.S. EPA. The U.S. EPA will require the property owner to sign an O&M agreement prior to installation. The O&M agreement states that the property owner will provide electricity to power the vapor abatement system inline fan. The vapor abatement system inline fan is warranted by the manufacturer for 5 years following installation.

Off-Site Rule

All hazardous substances, pollutants, or contaminants removed off-Site pursuant to this removal action for treatment, storage, and disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by U.S. EPA, with the U.S. EPA Off-Site Rule, 40 C.F.R. § 300.440.

2. Contribution to remedial performance

The proposed action will not impede future actions based on available information. The proposed removal actions are consistent with the long term remedial plan for the Site which will include containment.

3. Engineering Evaluation/Cost Analysis (EE/CA)

Not Applicable

4. Applicable or relevant and appropriate requirements (ARARs)

All applicable and relevant and appropriate requirements (ARARs) of Federal and State law will be complied with to the extent practicable. The OSC submitted a letter dated August 3, 2012, to Laura Marshall, Ohio EPA Southwest District Office, requesting state ARARs for the SDDL Site. Any state ARARs identified in a timely manner will be complied with to the extent practicable.

5. Project Schedule

The removal activities are expected to take 100 on-site working days to complete.

Estimated Costs

The detailed cleanup contractor cost is presented in Attachment I and the Independent Government Cost Estimate is presented in Attachment IV. Estimated project costs are summarized below:

Regional Removal Allowance Costs	
Total Cleanup Contractor Costs (Includes a 20% contingency)	$1,453,123
Other Extramural Costs Not Funded from the Regional Allowance	
Total START, including multiplier costs	$110,000
Subtotal, Extramural Costs	$1,563,123
Extramural Costs Contingency (15% of Subtotal, Extramural Costs)	$234,468
TOTAL REMOVAL ACTION PROJECT CEILING	$1,797,591

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health and safety and the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances and pollutants or contaminants documented on Site, and the potential exposure pathways to nearby populations described in Section II, III, IV, and V above, actual or threatened releases of hazardous substances and pollutants or contaminants from this Site, if not addressed by implementing or delaying the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment, increasing the potential that hazardous substances will be released, thereby threatening the adjacent population and the environment.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Enforcement Confidential Addendum.

The total U.S. EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be $3,131,129.[1]

($1,797,591 + $126,180) + (62.76% x $1,923,771) = $3,131,129

IX. RECOMMENDATION

This decision document represents the selected removal action for the SDDL Site, located in Moraine, Montgomery County, Ohio, developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site (Attachment II). Conditions at the Site meet the NCP Section 300.415(b) criteria for a removal, and I recommend your approval of the proposed removal action.

[1] Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

The total removal action project ceiling, if approved, will be $1,797,591. Of this, as much as $1,687,591 comes from the Regional removal allowance.

APPROVE _____ DATE: 10-9-12
Director, Superfund Division

DISAPPROVE _____ DATE: _____
Director, Superfund Division

Enforcement Addendum

Figures:

- A-1 Site Location Map
- A-2 PRP Sampling Summary Map (Pre-June 2012)
- A-3 U.S. EPA Soil Gas and Sub-Slab Sampling Location Map
- A-4 Photographic Documentation

Tables:

- B-1 U.S. EPA Analytical Results – Soil Gas Sampling
- B-2 U.S. EPA Analytical Results – Residential Sub-Slab Sampling
- B-3 U.S. EPA Analytical Results – Non-Residential Sub-Slab Sampling

Attachments:

- I. Detailed Cleanup Contractor Cost Estimate
- II. Administrative Record Index
- III. Region V EJ Analysis
- IV. Independent Government Cost Estimate

cc: S. Fielding, U.S. EPA 5202G
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Mike DeWine, Ohio Attorney General, **w/o Enf. Addendum**
(email: Mike.DeWine@ohioattorneygeneral.gov)

ENFORCEMENT ADDENDUM

SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, MONTGOMERY COUNTY, OHIO

OCTOBER 2012

ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY

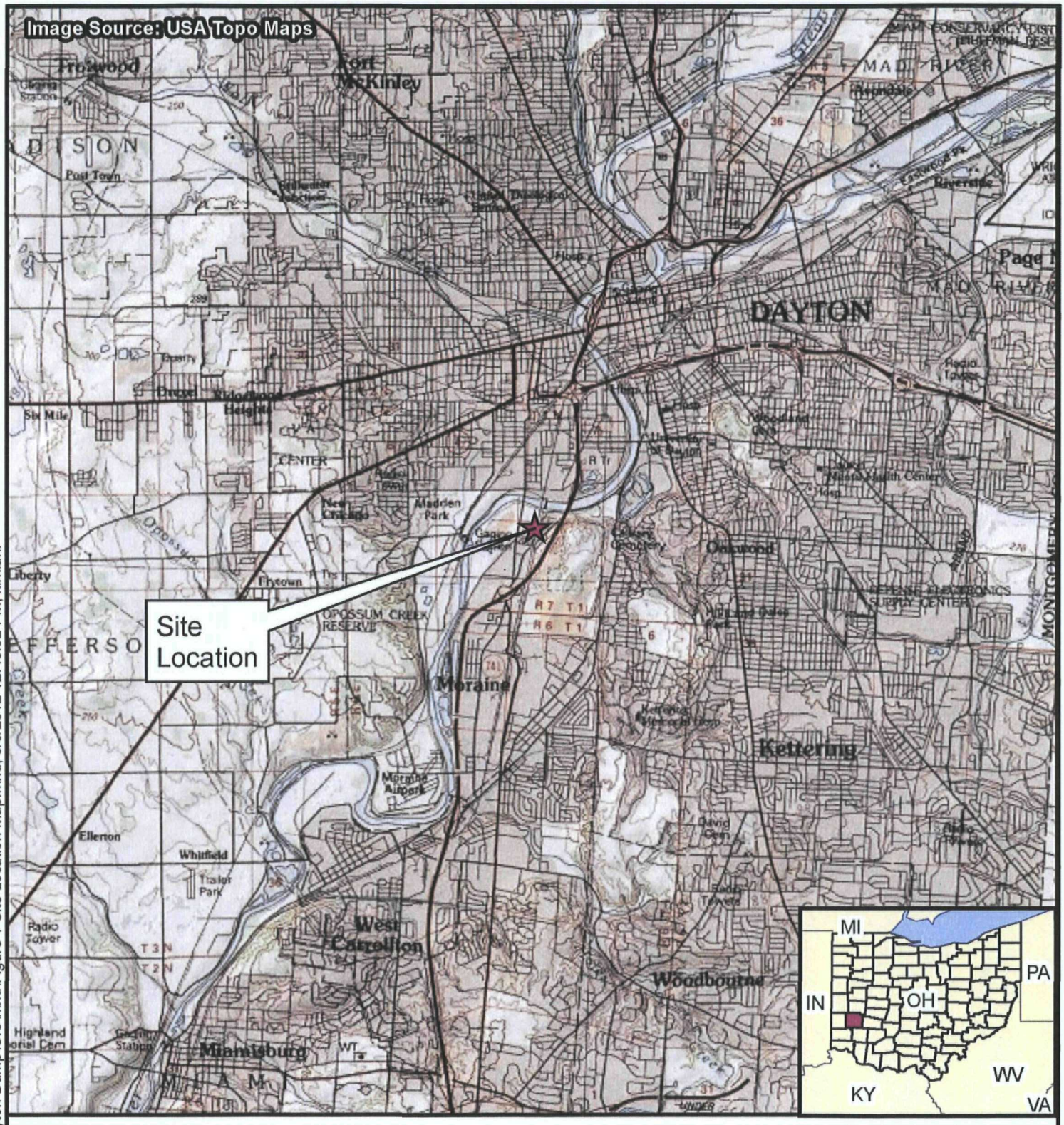
FOIA EXEMPT

(REDACTED 4 PAGES)

ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY

FIGURE A-1

SITE LOCATION MAP



0 1.5 Miles

N

Prepared For:
U.S. EPA REGION V

Contract No: EP-S5-06-04
TDD No.: S05-0008-1206-002
DCN: 1868-XX-XXXX

Prepared By:
WESTON SOLUTIONS, INC.

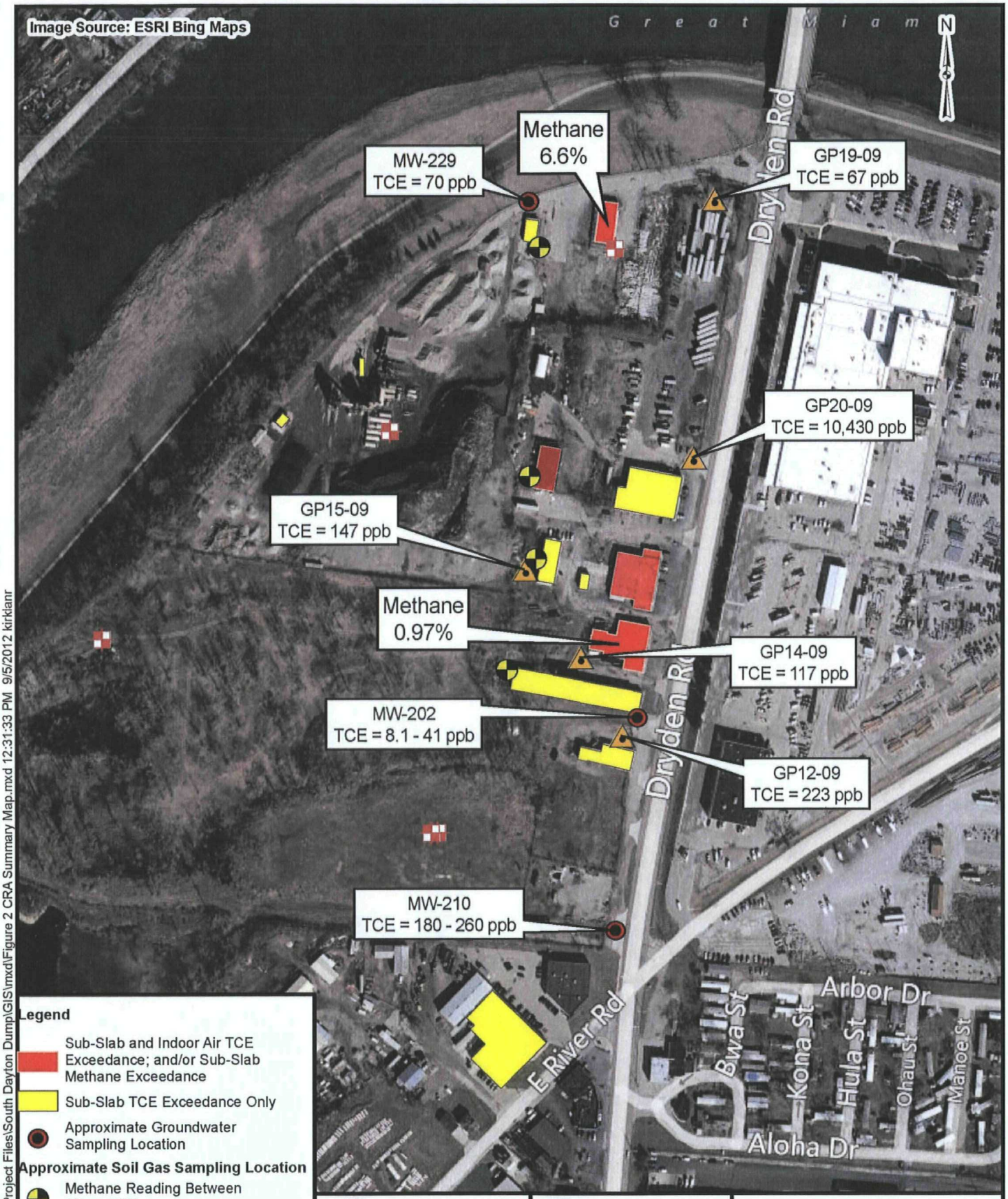
4710-A Interstate Drive
Cincinnati, Ohio 45246

Figure 1
Site Location Map
South Dayton Landfill Site
Moraine, Montgomery County, Ohio

Path: C:\START Project Files\South Dayton Dump\GIS\mxd\Figure 1 Site Location Map.mxd, 8/6/2012 12:46:32 PM, kirklanr

FIGURE A-2

PRP SAMPLING SUMMARY MAP (PRE-JULY 2012)



FILE: C:\START Project Files\South Dayton Dump\GIS\mxd\Figure 2 CRA Summary Map.mxd 12:31:33 PM 9/5/2012 kirklanr

Prepared for:
U.S. EPA REGION V

Contract No.: EP-S5-06-04
TDD: S05-0008-1206-002

Prepared By:
WESTON SOLUTIONS, INC

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Figure 2
PRP Sampling Summary Map
(Pre-July 2012)
South Dayton Dump and Landfill Site
Moraine, Montgomery County, Ohio

FIGURE A-3

U.S. EPA SOIL GAS AND SUB-SLAB SAMPLING LOCATION MAP

FILE: C:\START Project Files\South Dayton Dump\GIS\mxd\Figure 3 Soil Gas and SS Sampling Location Map rev01.mxd 5:08:42 PM 8/22/2012 kirklanr

Prepared for:
U.S. EPA REGION V

Contract No.: EP-S5-06-04
TDD: S05-0008-1206-002
DCN: 1868-XX-XXXX

Prepared By:
WESTON SOLUTIONS, INC

4710-A Interstate Drive
Cincinnati, Ohio 45246

Figure 3
U.S. EPA Soil Gas and Sub-Slab Sampling Location Map
South Dayton Dump and Landfill Site
Moraine, Montgomery County, Ohio

FIGURE A-4

PHOTOGRAPHIC DOCUMENTATION

Photo 1: Residential Sub-Slab Sampling on East River Road

Photo 2: Soil Gas Sampling adjacent to residence on East River Road

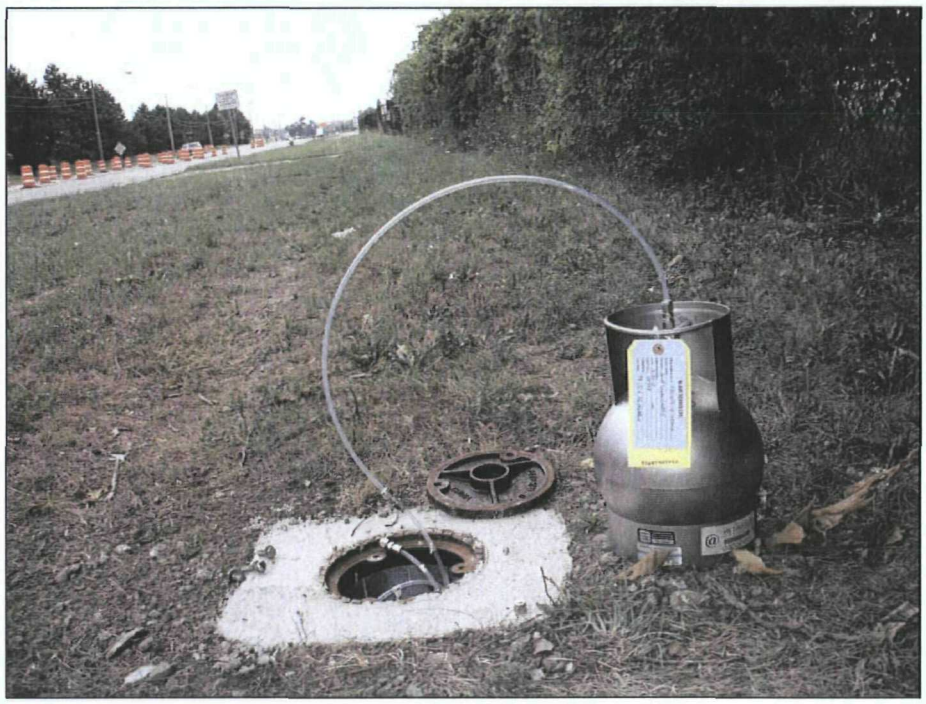


Photo 3: Soil Gas Sampling on Dryden Road

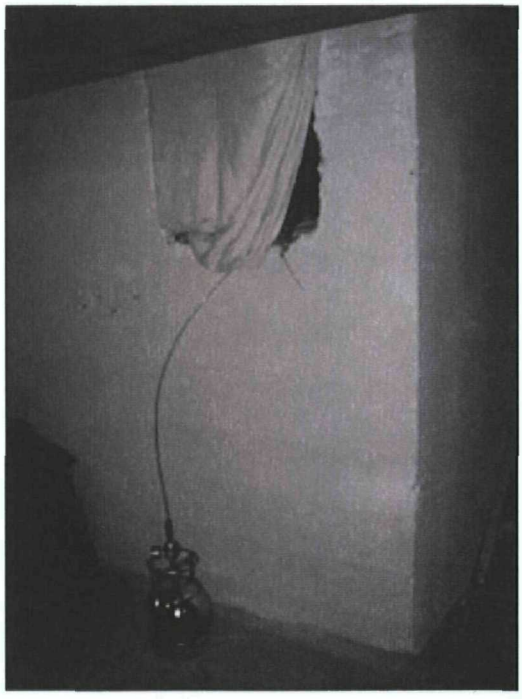


Photo 4: Residential Indoor Air Sampling by PRPs on East River Road

Photo 5: Sub-Slab Sampling at a Non-Residential building on Dryden Road

Photo 6: Installation of soil gas probes using a GeoProbe unit

TABLE B-1

U.S. EPA ANALYTICAL RESULTS – RESIDENTIAL SUB-SLAB SAMPLING SOUTH DAYTON DUMP AND LANDFILL SITE

Compound	Sub-Slab Screening Level (10^{-5} Risk level)				
		Sample ID	2391RIVER-SS-080112	2232RIVER-SS-080112	2373RIVER-SS-080112
		Address	2391 East River Road	2232 East River Road	2373 East River Road
		Date Sampled	8/1/2012	8/1/2012	8/1/2012
Tetrachloroethylene	60		20	7.7	8.8
Percent Methane	0.5%		ND (0.00018%)	ND (0.00018%)	0.00028%

Notes:

Results reported in parts per billion by volume, except for percent methane.

ND = Not detected at reporting limit

TABLE B-2

U.S. EPA ANALYTICAL RESULTS – NON-RESIDENTIAL SUB-SLAB SAMPLING SOUTH DAYTON DUMP AND LANDFILL SITE

Compound	Sub-Slab Screening Level (10^{-5} Risk level)	Sample ID	2230Dryden-SS-071212	2205ADryden-SS-071212	2205BDryden-SS-071212
		Address	2230 Dryden Road	2205 Dryden Road	2205 Dryden Road
		Date Sampled	7/12/2012	7/12/2012	7/12/2012
cis-1,2-Dichloroethylene	370		ND (0.90)	ND (0.88)	ND (0.86)
Benzene	20		ND (0.90)	ND (0.88)	ND (0.86)
Chloroform	800		ND (0.90)	ND (0.88)	ND (0.86)
Tetrachloroethene	250		ND (0.90)	ND (0.88)	**110**
Trichloroethylene	20		ND (0.90)	ND (0.88)	ND (0.86)
m,p-Xylene	2,000		ND (0.90)	ND (0.88)	ND (0.86)
o-Xylene	2,000		ND (0.90)	ND (0.88)	ND (0.86)
Vinyl Chloride	20		ND (0.90)	ND (0.88)	ND (0.86)
Percent Methane	0.5%		0.00022%	ND (0.00018%)	ND (0.00018%)

TABLE B-2 (continued)

U.S. EPA ANALYTICAL RESULTS – NON-RESIDENTIAL SUB-SLAB SAMPLING
SOUTH DAYTON DUMP AND LANDFILL SITE

Compound	Sub-Slab Screening Level (10^{-5} Risk level)	Sample ID	1951 Dryden-SS-080712	2031 Dryden-SS-080712	2015 Dryden-SS-080812
		Address	1951 Dryden Road Probe D (Building 1)	2031 Dryden Road Probe C	2015 Dryden Road Probe B (S&J Building)
		Date Sampled	8/7/2012	8/7/2012	8/8/2012
cis-1,2-Dichloroethylene	370		**52**	**27,000**	**1,400**
Benzene	20		ND (11)	**540**	ND (28)
Chloroform	800		**30**	ND (35)	ND (28)
Tetrachloroethene	250		**18**	ND (35)	ND (28)
Trichloroethylene	20		**2,900**	**460**	**17,000**
m,p-Xylene	2,000		ND (11)	**2,100**	ND (28)
o-Xylene	2,000		ND (11)	**2,000**	ND (28)
Vinyl Chloride	20		ND (11)	**2,600**	ND (28)
Percent Methane	0.5%		0.00037%	**2.2**	0.00045%

Notes:

Results reported in parts per billion by volume, except for percent methane.
Results bolded and highlighted yellow indicate results exceeding the sub-slab screening level at the 10^{-5} Risk Level (Hazard Index of 1.0)
Results bolded and highlighted red indicate results exceeding the sub-slab screening level at both the 10^{-4} and 10^{-5} Risk Levels. 10^{-4} Risk Levels (Hazard Index of 10) are 10-times greater than 10^{-5} Risk Levels.
ND = Not detected at reporting limit

TABLE B-3

U.S. EPA ANALYTICAL RESULTS – PERIMETER SOIL GAS SAMPLING
SOUTH DAYTON DUMP AND LANDFILL SITE

Compound	Sub-Slab Screening Level (10^{-5} Risk level)	Sample ID	SDL-GP1-8-073012	SDL-GP2-16-073012	SDL-GP3-8-073012	SDL-GP4-16-073012	SDL-GP6-12-073012
		Gas Probe	GP-1	GP-2	GP-3	GP-4	GP-6
		Sampling Depth	8-feet	16-feet	8-feet	16-feet	12-feet
cis-1,2-Dichloroethene	370		ND (0.78)	ND (370)	**0.88**	ND (0.76)	ND (0.74)
Hexane	NP		ND (0.78)	**12,000**	ND (0.78)	ND (0.76)	ND (0.74)
Heptane	NP		ND (0.78)	**860**	ND (0.78)	ND (0.76)	ND (0.74)
2,2,4-Trimethylpentane	NP		ND (0.78)	**14,000**	ND (0.78)	ND (0.76)	ND (0.74)
Chloroform	800		ND (0.78)	ND (370)	ND (0.78)	**1.2**	ND (0.74)
Benzene	20		ND (0.78)	ND (370)	ND (0.78)	**1.7**	ND (0.74)
Trichloroethene	20		ND (0.78)	ND (370)	**120**	**49**	**41**
Tetrachloroethene	250		**0.88**	ND (370)	**3.2**	**1.0**	**10**
Ethyl Benzene	2,500		ND (0.78)	ND (370)	ND (0.78)	**0.96**	ND (0.74)
m,p-Xylene	2,000		**1.1**	ND (370)	ND (0.78)	**1.1**	ND (0.74)
Percent Methane	0.5%		ND (0.00018%)	**2.5%**	ND (0.00018%)	ND (0.00018%)	ND (0.00018%)

Notes:

Results reported in parts per billion by volume, except for percent methane.
Results bolded and highlighted yellow indicate results exceeding the sub-slab screening level at the 10^{-5} Risk Level (Hazard Index of 1.0)
ND = Not detected at reporting limit
NP = Not provided by the Ohio Department of Health

ATTACHMENT I

DETAILED CLEANUP CONTRACTOR COST ESTIMATE
INDEPENDENT GOVERNMENT CLEANUP CONTRACTOR ESTIMATE

SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, MONTGOMERY COUNTY, OHIO
OCTOBER 2012

The estimated cleanup contractor (ERRS) costs necessary to complete the removal action at the SDDL Site are as follows:

Personnel & Equipment	$555,936
Materials/Misc	$645,000
Transportation & Disposal	$10,000
Total	$1,210,936
Plus 20% Contingency	$242,187
Total ERRS Contractor Costs	**$1,453,123**

ATTACHMENT II

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, MONTGOMERY COUNTY, OHIO

ORIGINAL
SEPTEMBER 2012

NO	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	08/15/06	U.S. EPA	Respondents	Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study - South Dayton Dump and Landfill	106
2	06/09/11	CRA	U.S. EPA	Figure 3: 2009 and 2010 Soil Vapor Sampling Results that Exceed U.S. EPA Screening Levels at the South Dayton Dump and Landfill Site (VOCs)	1
3	06/09/11	CRA	U.S. EPA	Figure 3: 2009 and 2010 Soil Vapor Sampling Results that Exceed U.S. EPA Screening Levels at the South Dayton Dump and Landfill Site (VOCs)	1
4	11/04/11	Cibulskis, K., U.S. EPA	Conestoga-Rovers & Associates	U.S. EPA Modified Vapor Intrusion Study Work Plan for the South Dayton Dump and Landfill Site w/Cover Letter	125
5	06/00/12	U.S. EPA	Public	Site Summary/Fact Sheet for the South Dayton Dump and Landfill Site	3
6	06/00/12	Ohio Department of Health	Public	Fact Sheet: Methane: Answers to Frequently Asked Health Questions	2
7	06/05/12	Cibulskis, K., U.S. EPA	Renninger, S., U.S. EPA	Memorandum re: Request for Removal Assistance in Evaluating Vapor Intrusion Data and Removal Authority at the South Dayton Dump and Landfill Site	2

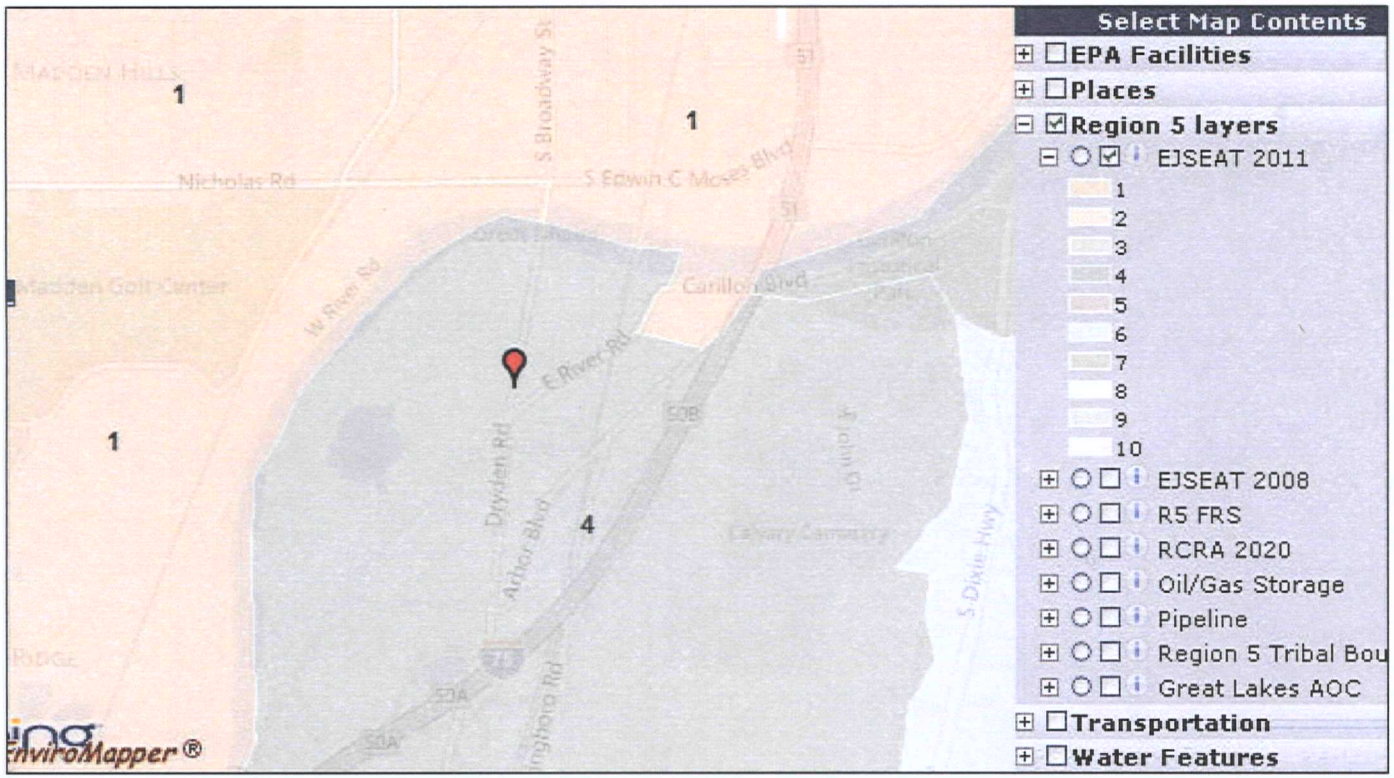
NO	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
8	06/21/12	Ohio Department of Health	Public	Fact Sheet: Trichloroethylene (TCE): Answers to Frequently Asked Health Questions	2
9	07/06/12	Frey, R., Ohio Dept. of Health	Renninger, S., U.S. EPA	Letter re: Transmittal of Attached Screening Levels for Contaminants of Concern in Indoor and Sub-Slab Soil Gas for Properties at the South Dayton Dump and Landfill Site	4
10	07/17/12	Marshall, L., Ohio EPA	Durno, M., U.S. EPA	Letter re: Ohio EPA Supports U.S. EPA's June 5, 2012 Request for Removal Assistance in Evaluating Current and Potential Vapor Intrusion Risks at the South Dayton Dump and Landfill Site	1
11	08/03/12	Renninger, S., U.S. EPA	Marshall, L., Ohio EPA	Letter re: U.S. EPA Request that Ohio EPA Identify any ARARs for the South Dayton Dump and Landfill Site	2
12	00/00/00	Weston Solutions, Inc.	U.S. EPA	Site Assessment Report for the South Dayton Dump Site **(PENDING)**	
13	00/00/00	Renninger, S., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: South Dayton Dump Site **(PENDING)**	

ATTACHMENT III

REGION 5 EJ ANALYSIS

The area surrounding the SDDL Site was screened for Environmental Justice (EJ) concerns using Region 5's EJ Assist Tool (which applies the interim version of the national EJ Strategic Enforcement Assessment Tool (EJSEAT)). Census tracts with a score of 1, 2, or 3 are considered to be high-priority potential EJ areas of concern according to EPA Region 5. The SDDL Site is in a census tract with a score of **4** (Figure 1). Therefore, Region 5 does not consider this Site to be a high-priority potential EJ area of concern.

Figure 1
SDDL Site Map Showing EJ SEAT Values For Surrounding Area



ATTACHMENT 4

INDEPENDENT GOVERNMENT COST ESTIMATE

SOUTH DAYTON DUMP AND LANDFILL SITE
MORAINE, MONTGOMERY COUNTY, OHIO
OCTOBER 2012

(REDACTED 3 PAGES)

NOT RELEVANT TO THE SELECTION OF THE REMOVAL ACTION